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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,647	10/29/2001	Eric R. Lovegren	R11.12-0763	1207

7590 11/24/2003

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EXAMINER
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SUN, XIUQIN

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AA

# Office Action Summary

Application No.

10/046,647

Applicant(s)

LOVEGREN ET AL.

Examiner

Xiuqin Sun

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06/11/2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. Based on the recent received IDS the previous Office Action dated 07/11/2003 is hereby withdrawn and replaced by the following Office Action.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 5, 11, 12, 15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vestergaard et al. (U.S. Pat. No. 4196385) in view of Uchida (JP2000241364, English translation).

Vestergaard et al. teach an apparatus and method for measuring the concentration of a material in a process fluid (col. 1, lines 5-10 and col. 2, lines 12-16), comprising the steps and means that implement: an antenna configured to contact the process fluid (col. 2, lines 17-30, lines 65-67; col. 3, lines 1-2 and col. 4, lines 36-40); a pulse generator coupled to configure the antenna to generate an electric pulse transmit pulse through the antenna (col.2, lines 17-30, lines 65-67 and col. 3, lines 1-2); a pulse receiver coupled to the antenna configured to receive a reflected pulse from the antenna (col. 3, lines 29-38); and a concentration calculator configured to calculate the

concentration of the material as a function of the reflected pulse (col. 2, lines 17-30; and col. 4, lines 60-67).

Vestergaard et al. do not mention explicitly that: the electric pulse generated by the pulse generator is a microwave pulse; said concentration of the material is calculated as a function of a time delay of the return pulse; said antenna extends in a direction of a flow of the process fluid; and said calculation includes calculating a dielectric constant of the process fluid.

Uchida discloses measuring apparatus for the concentration of a liquid, and teaches: the use of a pulse generator for generating microwave pulse (Abstract and section 0023); the use of a time delay of the return pulse in calculating the concentration of materials (Abstract; sections 0023-0025 and 0035-0040); an antenna of microwave pulse configured to contact the process fluid, wherein said antenna extends in a direction of a flow of the process fluid (Abstract and section 23); a concentration calculator configured to calculate the concentration of the material as a function of the reflected pulse, wherein said calculation includes calculating a dielectric constant of the process fluid (Abstract, sections 23-25 and 35-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Uchida in the Vestergaard apparatus and method in order to provide an apparatus and method of high accuracy and reliability to measure the concentration of a process fluid (Uchida, Abstract).

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4. Claims 3, 4, 8, 13, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vestergaard et al. in view of Uchida, as applied to claims 1 and 11 above, and further in view of Marrelli (U.S. Pat. No. 5763794).

Vestergaard et al. and Uchida teach the apparatus and method that includes the subject matter discussed above. Vestergaard et al. and Uchida do not mention explicitly that: said concentration of the material is calculated as a function of an energy level of the return pulse; said antenna comprises a pitot tube; and the calculated concentration is transmitted on a process control loop.

Marrelli teaches a method of determining concentration of material in a process fluid, wherein said concentration of the material is calculated as a function of an energy level of the return pulse (col. 1, lines 12-21; col. 3, lines 53-67 and col. 4, lines 1-12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Marrelli in the apparatus and method of Vestergaard and Uchida in order to carry out the calculation based on attenuation of transmitted and reflected microwave energy (Marrelli, col. 1, lines 12-21).

Marrelli further teaches: a pitot tube is used in sampling the fluid for determining the concentration of the material in the process fluid; and the calculated concentration is transmitted on a process control loop (col. 3, lines 1-28; col. 3, lines 53-67 and col. 4, lines 1-12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Marrelli in the apparatus and method of

Vestergaard and Uchida in order to provide a better means for sampling the fluid to be analyzed for process control purpose (Marrelli, col. 1, lines 49-58).

5. Claims 6, 7, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vestergaard et al. in view of Uchida, as applied to claims 1 and 11 above, and further in view of Adams et al. (U.S. Pat. No. 5864239).

Vestergaard et al. and Uchida teach the apparatus and method that includes the subject matter discussed above. The combination of Vestergaard et al. and Uchida does not mention explicitly that: said antenna is curved; and said antenna is helical.

Adams et al. disclose a microwave pulse based apparatus for measuring a power mass flow, and teach that: the antenna of is curved (Abstract; Fig. 1b; col. 2, lines 62-67 and col. 3, lines 1-10); and said antenna is helical (Abstract; Fig. 1b; col. 2, lines 62-67 and col. 3, lines 1-10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Adams et al. in the combination of Vestergaard and Uchida in order to provide a smaller and more accurate microwave pulse generator (Adams et al., col. 2, lines 62-67 and col. 3, lines 1-10).

6. Claims 9, 10, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vestergaard et al. in view of Uchida and Marrelli, as applied to claims 1, 4, 11 and 14 above, and further in view of Jean et al. (U.S. Pat. No. 6614238).

Vestergaard et al., Uchida and Marrelli teach the apparatus and method that includes the subject matter discussed above. The combination of Vestergaard et al.,

Uchida and Marrelli does not mention explicitly that: said pulses are carried along an exterior of the pitot tube; and said pulses are carried along an interior of the pitot tube.

Jean et al. teach a technique for measuring the composition of fluid mixtures from the bulk electrical properties of the mixtures (Abstract), wherein: pulses are carried along an exterior of the pitot tube (Abstract; Figs. 1-6; col. 3, lines 51-59, lines 66-67 and col. 4, lines 1-11); and said pulses are carried along an interior of the pitot tube (Abstract; Figs. 1-6; col. 3, lines 51-59, lines 66-67 and col. 4, lines 1-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Jean et al. in the combination of Vestergaard, Uchida and Marrelli in order to provide a configuration of high accuracy and reliability for transmitting the microwave pulses (Jean et al., col. 3, lines 51-59).

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-4, 8, 11-14, 18 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-4, 8, 11-14, 18 and 21 are rejected as new art (Uchida, JP2000241364) has been found to teach the use of a pulse generator for generating microwave pulse, and the use of a time delay of the return pulse in calculating the concentration of a material. For more detailed response, please refer to section 2 set forth above in this Office Action.

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**Contact Information**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

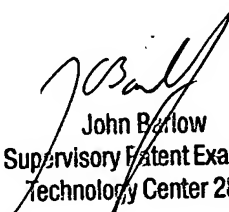
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Xiuqin Sun  
Examiner  
Art Unit 2863

XS

November 17, 2003

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800